**WHAT IS CLAIMED IS:**

1. An automatic gain controller of an optical fiber amplifier that outputs transient suppressing signals in order to minimize a transient response characteristic, comprising:

a first opto-electric conversion unit for receiving and converting into a first group of electrical signals a first portion of optical signals input into the optical fiber amplifier and to output the first group of electrical signals;

a second opto-electric conversion unit for receiving and converting into a second group of electrical signals a first portion of optical signals output from the optical fiber amplifier and to output the second group of electrical signals;

a transient suppressing unit for generating pulse-type waveforms when a change in channel quantity is generated during monitoring outputs of the first opto-electric conversion unit;

a comparing unit for comparing the sum of output signals of the transient suppressing unit and output signals of the first opto-electric conversion unit with output signals of the second opto-electric conversion unit;

a controlling unit for outputting pump control signals in response to the output signals of the transient suppressing unit and output signals of the comparing unit; and

a first pumping light source unit for supplying pumping light to the optical fiber amplifier in response to the inputting of the pump control signals.

2. The automatic gain controller according to claim 1, wherein the controlling unit comprises:

a proportional controller for operating in response to the output signals of the transient suppressing unit and the output signals of the comparing unit; and

an integral controller for operating in response to the output signals of the comparing unit.

3. The automatic gain controller according to claim 2, wherein the output signals of the transient suppressing unit are input into each of the proportional and integral controllers in order to operate the proportional controller without a delay relative to a momentary input change of the optical fiber amplifier.

4. The automatic gain controller according to claim 1, further comprising a second pumping light source unit for providing a fixed bias current to the optical fiber amplifier.

5. The automatic gain controller according to claim 1, further comprising a micro control unit for compensating offsets caused by power of amplified spontaneous emission, depending on a change in input power of the optical fiber amplifier or a change in temperature.

6. The automatic gain controller according to claim 4, further comprising a micro control unit for compensating offsets caused by power of amplified spontaneous emission, depending on a change in input power of the optical fiber amplifier or a

change in temperature.

7. An automatic gain controller of an optical fiber amplifier, comprising:

an optical fiber amplifying unit comprising first and second optical fiber amplifiers for amplifying input optical signals;

a first opto-electric conversion unit for converting into electrical signals a first portion of input optical signals and to output the electrical signals;

a second opto-electric conversion unit for converting into electrical signals a first portion of optical signals output from the optical fiber amplifying unit and to output the converted signals;

a first pumping light source unit for supplying a fixed bias current to the first optical fiber amplifier in response to inputting of pump control signals;

a transient suppressing unit for generating pulse typed waveforms when a change in channel number is generated during monitoring outputs of the first opto-electric conversion unit;

a comparing unit that compares the sum of output signals of the transient suppressing unit and output signals of the first opto-electric conversion unit with output signals of the second opto-electric conversion unit;

a controlling unit that controls outputting the pump control signals in response to the output signals of the transient suppressing unit and output signals of the comparing unit; and

a second pumping light source unit for providing pumping light to the second optical fiber amplifier in response to the inputting of the pump control signals.

8. The automatic gain controller according to claim 7, wherein the controlling unit comprises:

a proportional controller for operating in response to the output signals of the transient suppressing unit and the output signals of the comparing unit; and

an integral controller for operating in response to the output signals of the comparing unit.

9. The automatic gain controller according to claim 8, wherein the output signals of the transient suppressing unit are input into each of the proportional and integral controllers, in order to operate the proportional controller without a delay relative to a momentary input change of the optical fiber amplifier.

10. The automatic gain controller according to claim 7, further comprising a micro control unit for compensating offsets caused by power of amplified spontaneous emission, depending on one of a change in input power of the optical fiber amplifier and a change in temperature.

11. A method for automatic gain control of an optical fiber amplifier that outputs transient suppressing signals in order to minimize a transient response characteristic, comprising the steps of:

(a) converting into a first group of electrical signals a first portion of optical signals input into the optical fiber amplifier and outputting the first group of electrical signals;

(b) converting into a second group of electrical signals a first portion of optical

signals output from the optical fiber amplifier and to output the second group of electrical signals;

(c) generating pulse-type waveforms when a change in channel quantity is generated during monitoring outputs of the first group of electrical signals;

(d) comparing the pulse-type waveforms generated in step (c) with the first group of electrical signals from step (a) and the second group of electrical signals from step (b);

(e) outputting pump control signals in response to the comparison performed in step (d); and

(f) supplying pumping light to the optical fiber amplifier in response to the outputting of the pump control signals in step (e).

12. The method according to claim 11, wherein the outputting of pump control signals further comprises the sub-steps of:

(i) operating a proportional controller in response to the pulse-type waveforms generated in step (c) and the signals generated in step (d) and output in step (e);

(ii) operating an integral controller in response to the output signals of step (d).

13. The method according to claim 12, wherein the waveforms output in step (c) are used to operate the proportional controller without a delay relative to a momentary input change of the optical fiber amplifier.

14. A method for automatic gain control of an optical fiber amplifier, comprising the steps of:

(a) amplifying input optical signals by an optical fiber amplifying unit comprising first and second optical fiber amplifiers;

(b) converting into electrical signals a first portion of input optical signals and to output the electrical signals by a first opto-electric conversion unit that converts into electrical signals a first portion of input optical signals and to output the electrical signals;

(b) converting into electrical signals a first portion of optical signals output from the optical fiber amplifying unit and to output the converted signals by a second opto-electric conversion unit;

(c) supplying a fixed bias current to the first optical fiber amplifier in response to inputting of pump control signals by a first pumping light source unit;

(d) generating pulse typed waveforms when a change in channel number is generated during monitoring outputs of the first opto-electric conversion unit by a transient suppressing unit;

(e) comparing the sum of output signals of the transient suppressing unit and output signals of the first opto-electric conversion unit with output signals of the second opto-electric conversion unit by a comparing unit;

(f) outputting the pump control signals in response to the output signals of the transient suppressing unit and output signals of the comparing unit by a controlling unit; and

(g) providing pumping light to the second optical fiber amplifier in response to the inputting of the pump control signals by a pumping light source unit.

15. The method according to claim 14, wherein the controlling unit comprises:

a proportional controller for operating in response to the output signals of the transient suppressing unit and the output signals of the comparing unit; and

an integral controller for operating in response to the output signals of the comparing unit; and

the output signals of the transient suppressing unit are input into each of the proportional and integral controllers, in order to operate the proportional controller without a delay relative to a momentary input change of the optical fiber amplifier.

16. The method according to claim 14, further comprising a micro control unit for compensating offsets caused by power of amplified spontaneous emission, depending on one of a change in input power of the optical fiber amplifier and a change in temperature.